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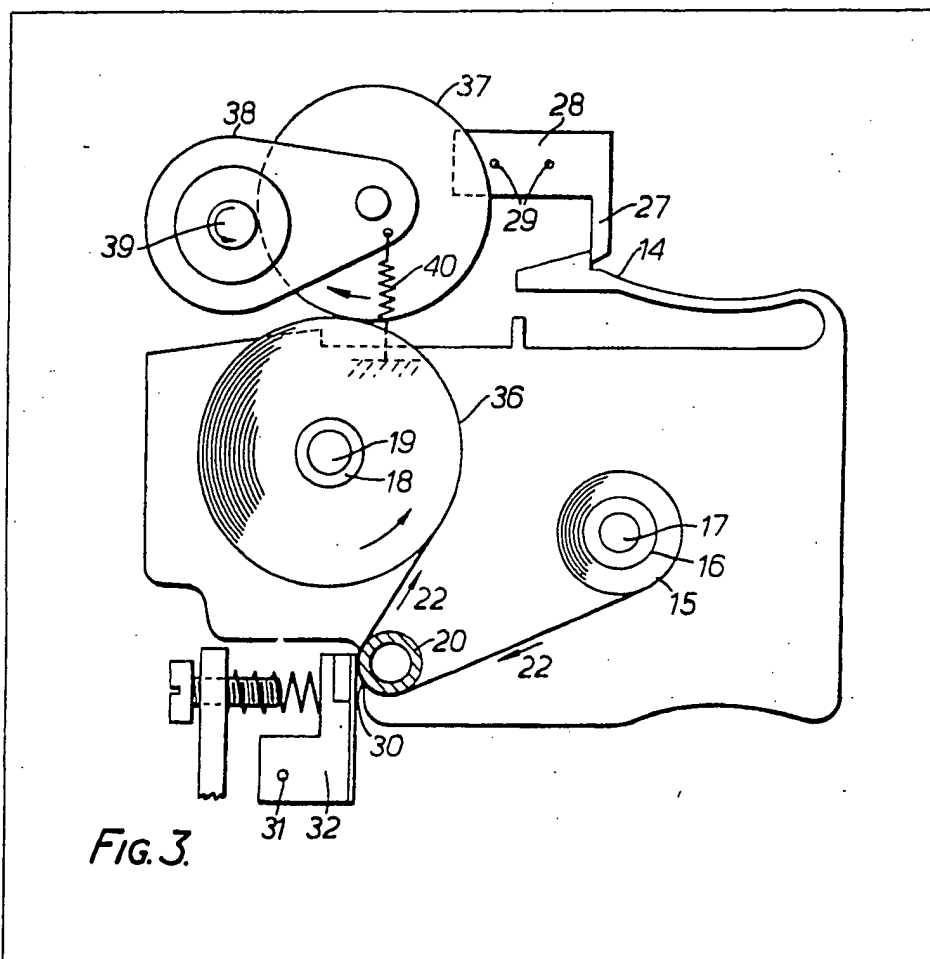
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(54) Drive mechanism for tape cassette

(57) A drive mechanism to enable a cassette tape to be driven at a pre-determined speed relative to a main printer, includes an intermediate rubber drive wheel 37 driven by the main printer platen spindle 39, one paper reel 36 in the cassette being driven directly by this intermediate wheel which is urged by spring 40 against the tape. The cassette casing is formed with an aperture which allows the intermediate drive wheel to contact the tape, the wheel partially penetrating the casing if necessary, and the cassette is retained in contact with the drive system by a retaining clip 14 and guide bars. Another aperture in the casing allows access by a thermal print head 32 to the tape in the vicinity of a platen 20. The cassette

may function as an audit cassette used as a check against sales made and printed by the main printer on the main platen.



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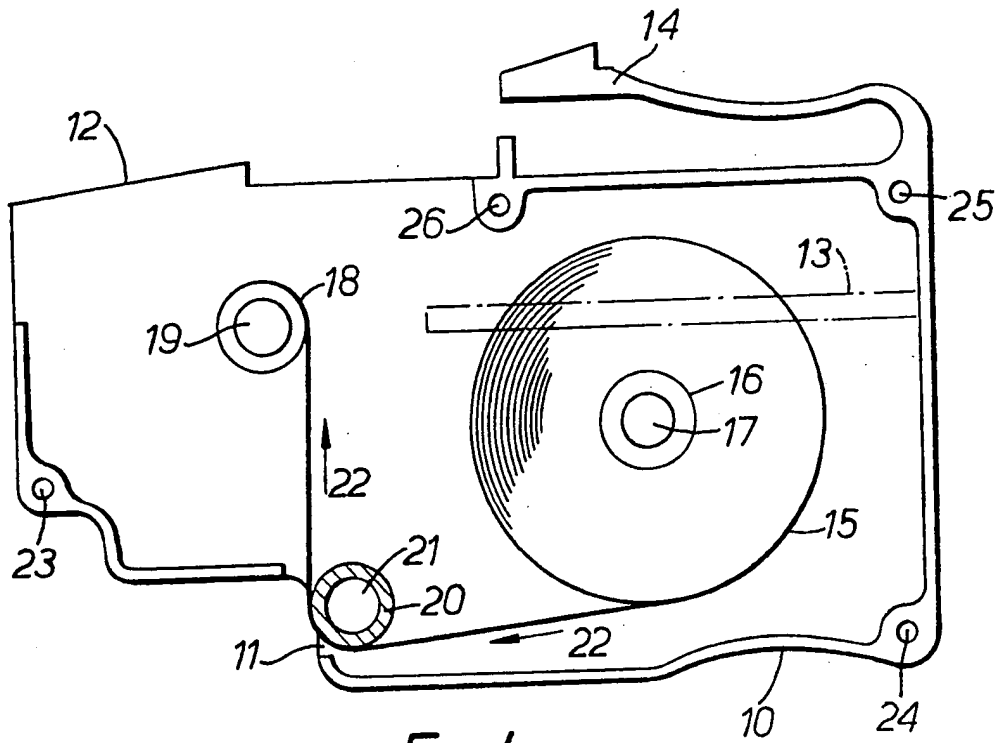


FIG. 1.

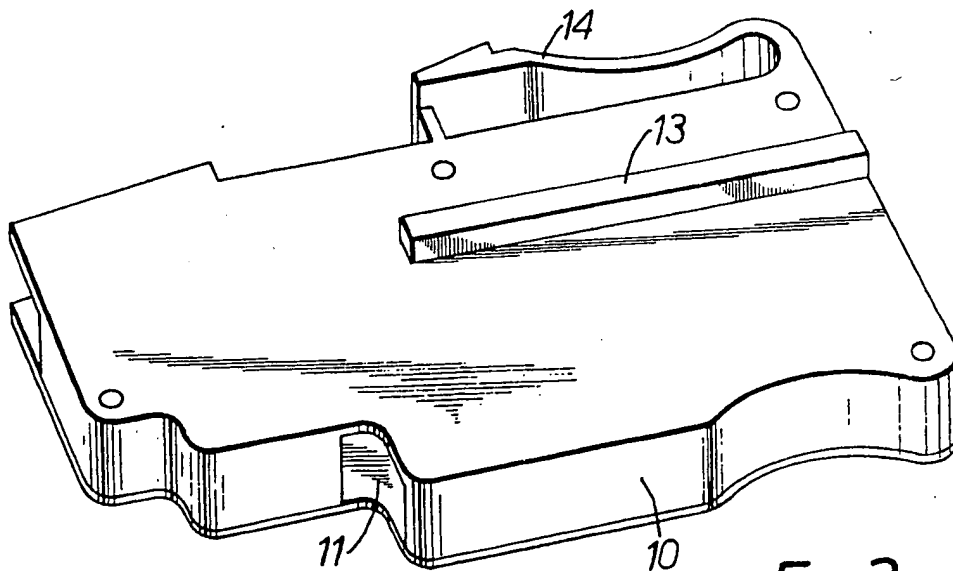


FIG. 2.

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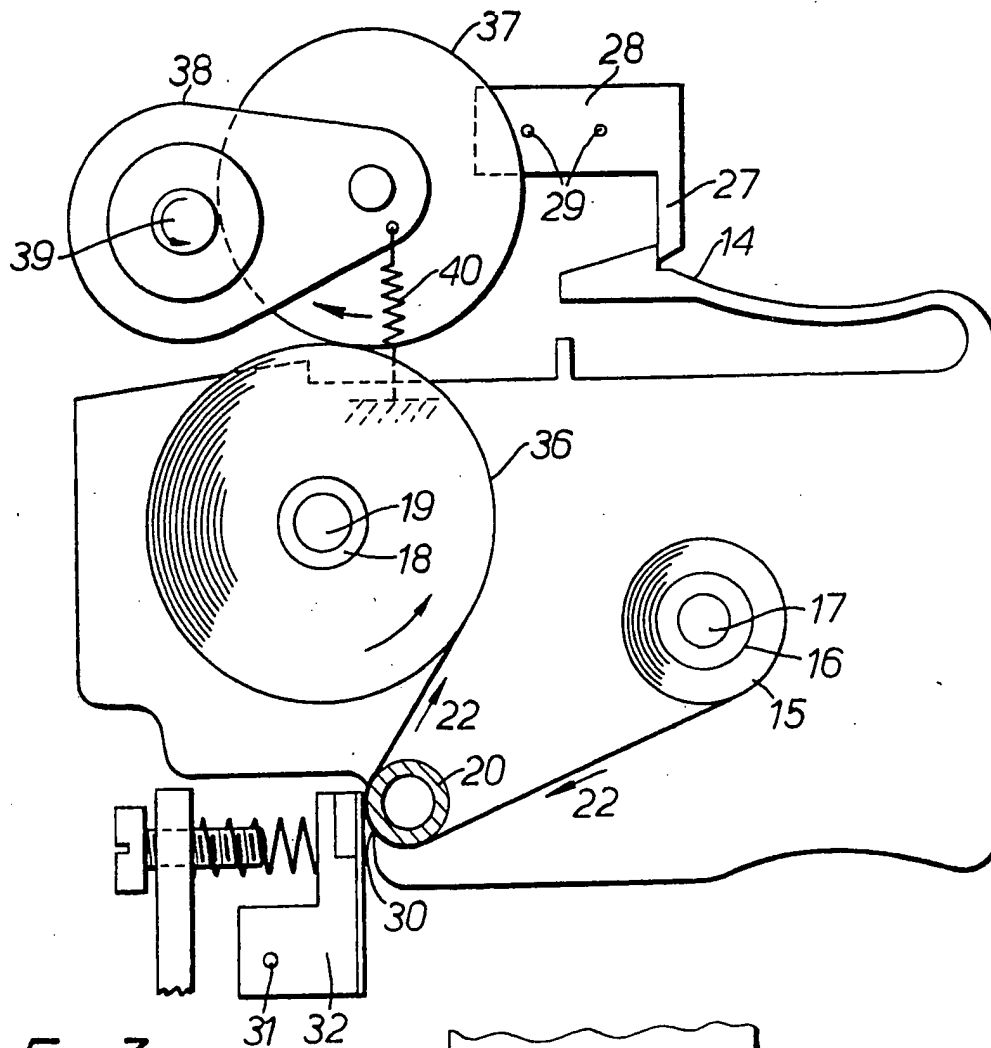


FIG. 3.

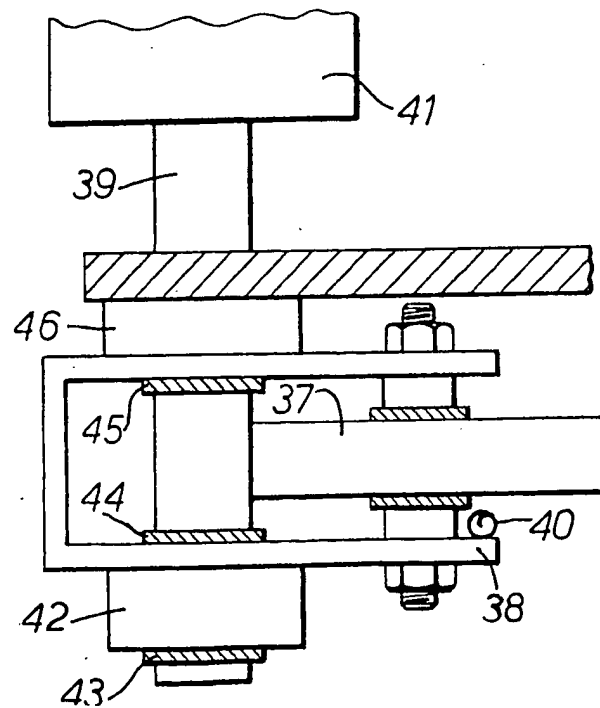


FIG. 4.

## SPECIFICATION

### Improvements in or relating to tape cassettes

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The present invention relates to tape cassettes and more particularly to a drive mechanism for a cassette reel of paper on which information is to be printed.

10

A problem which arises in respect of cassettes is that the drive mechanism should preferably be reasonably simple to allow easy insertion of the cassette and also to enable a simple design to be adopted for the cassette.

15

It is an object of the present invention to provide a drive mechanism for a cassette tape which in combination with the design of the cassette provides for simple insertion of the cassette and for accurate speed of the tape.

20

According to the present invention there is provided a tape cassette drive arrangement including a main platen drive spindle, a bracket rotatably mounted on said main platen drive spindle, a friction faced intermediate drive wheel rotatably mounted on said bracket with said main drive spindle, said drive wheel being spring urged against the tape on said cassette to drive said tape at a fixed speed in relation to said main platen speed.

30

Preferably the tape cassette is formed with two apertures, one for reception of the intermediate drive wheel to allow said wheel to drive said tape and a further aperture to allow access by a print head to said tape.

35

The cassette is preferably formed with a small platen driven by the tape.

The tape is preferably made from a thermally sensitive paper and the print head is preferably thermally operative.

40

The cassette is preferably inserted into the machine in an easy and simple manner and is provided in a preferred embodiment with alignment guide bars on each side for co-operation with alignment grooves in the main printing apparatus and with a spring clip for retention of said cassette in co-operation with a projection on said main printing apparatus to retain said cassette in a required position to co-operate with the tape drive mechanism.

50

The cassette is preferably made of a plastics material and is manufactured in two parts, one part being moulded with spindles for mounting the tape reels.

55

Embodiments of the present invention will now be described by way of example with reference to the accompanying drawings in which:-

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Figure 1 shows in partial cross-sectional elevation a cassette suitable for insertion into the printer to co-operate with the tape drive arrangement according to the present invention.

65

Figure 2 shows a perspective view of the cassette of Fig. 1 in partial cross sectional elevation,

Figure 3 shows in partial cross sectional elevation the drive arrangement incorporating a cassette as shown in Fig. 1 and

Figure 4 shows in plan view a portion of 70 the primary drive arrangement.

Referring now to Fig. 1 the cassette 10 comprises an outer plastic case with a number of apertures 11, 12. For accurate insertion and retention the cassette has two guide bars 75 13 (only the rear one being shown in dotted line) and a spring clip 14. The cassette contains a reel of paper 15 on a first spool 16 which is rotatably mounted on a first spindle 17 and a second spool 18 mounted on a 80 second spindle 19 to which the paper 15 is attached.

A rubber platen 20 is rotatably mounted on a third spindle 21. The paper 15 is normally moved in the direction indicated by the arrows 85 22 as explained hereinafter.

Referring now particularly to Fig. 2 the tape cassette shown comprises a plastic body which is preferably made in two parts and glued together after insertion of the paper 15 90 and platen 20. The spindles 17, 19 and 21 are preferably moulded integrally with one or other of the parts. Locating holes and dowels 23, 24, 25 and 26 (Fig. 1) are provided to ensure accurate alignment of the two parts.

Referring now to Fig. 3 the cassette 10 is inserted into the main portion of a machine (not shown) until the spring clip 14 engagingly locks behind a projection 27 of a bracket 28 100 mounted on the main frame of the apparatus as shown at 29. The locking action of the spring clip and the guidance provided by the guide bars 13 (not shown in Fig. 3) serves to maintain the cassette in a fixed relationship with respect to the main frame of the apparatus. 105

When the cassette is locked in position the platen 20 presses the paper against a thermal print head 30 which is rotatably mounted on a hinge pin 31 and bracket 32. The print 110 head is spring urged against the paper by a spring 33 the tension of which is adjustable by means of a screw 34 threaded into a bracket 35. The bracket is rigidly mounted onto the main frame of the apparatus as 115 indicated by the ragged line.

As shown in Fig. 3 a second paper reel 36 has been formed on the second spool 18 by winding the paper from the first reel 15 which is as shown diminished in size. The second 120 reel of paper is caused to rotate by a rubber drive wheel 37 which is rotatably mounted on a bracket 38. The bracket 38 is rotatably mounted onto the main platen drive spindle 39 which is shown in further detail in Fig. 4. 125 The bracket 38 is spring urged towards the second paper reel 36 by a spring 40 (shown dotted) such that the rubber drive wheel 37 is always in contact with the reel 36. When the reel 36 is much smaller the rubber wheel 37 130 can partially penetrate into the cassette 10

through the aperture 12. The rubber wheel 37 is rotated by frictional contact against the main platen drive spindle 39 in a direction shown by the arrows.

5 Referring now to Fig. 4, there is shown the drive arrangement for the cassette. The platen 41 is for a main printer which prints across a wide sheet of paper as opposed to the cassette strip. The main drive spindle 39 is  
10 driven by any conventional e.g. electric drive system not shown at predetermined constant speeds.

The U shaped bracket 38 is retained in position on the spindle 39 by a collar 42 and  
15 circlips 43, 44 and 45 and by spacing washer 46.

The wheel 37 is therefore driven by the main platen spindle 39 at a peripheral speed which is a fixed ratio of the speed of the  
20 peripheral speed of the main platen 41. The cassette tape will therefore be driven at a speed which will be constant in relation to the speed of the main platen.

The information printed therefore on the  
25 cassette will be spaced apart in accordance with the ratio of the cassette and main platen speeds.

Information printed on the cassette can for example merely be a customer identification  
30 number and the total bill, in which case the cassette functions as an audit cassette which may be used as a quick daily check against sales made and printed by the main printer on platen 41.

35 Alternatively, the cassette can be made to operate at a higher speed and to contain additional information e.g. as to the type of item sold.

#### 40 CLAIMS

1. A tape cassette drive arrangement including a main platen drive spindle, a bracket rotatably mounted on said main platen drive spindle, a friction faced intermediate drive  
45 wheel rotatably mounted on said bracket to bear against said main drive spindle, said friction faced intermediate drive wheel being spring urged against the tape on said cassette to drive said tape at a fixed speed in relation  
50 to said main platen speed.

2. A tape cassette drive arrangement as claimed in claim 1 in which the cassette is formed with two apertures, one for reception of the intermediate drive wheel to allow said  
55 wheel to drive said tape and a further aperture to allow access by a print head to said tape.

3. A tape cassette drive arrangement as claimed in claim 2 in which the cassette is formed with a small platen driven by said  
60 tape.

4. A tape cassette drive arrangement as claimed in claim 1 in which the tape is made from a thermally sensitive paper and the print head is thermally operative.

65 5. A tape cassette drive arrangement as

claimed in claim 1 in which the cassette is provided with alignment guide bars on each side thereof for co-operation with alignment grooves in the main printing apparatus and  
70 with spring clip means which retains said cassette, by co-operation with a projection on said main printing apparatus in a required position to co-operate with the tape drive mechanism.

75 6. A tape cassette drive arrangement as claimed in claim 1 in which the cassette is made of a plastics material and is manufactured in two parts, one of said parts being moulded with spindles for mounting the tape  
80 reels.

7. A tape cassette drive arrangement substantially as described with reference to the accompanying drawings.

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